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ABSTRACT

The brief narrative report on the impact of the elimination of the educational computing program, which was implemented at the University of Maine at Presque Isle in the fall of 1985 and discontinued after the spring semester of 1986, considers the likely effects of this decision on the campus mission, students, faculty, the University of Maine as a whole, and on the university's facilities and budget. The history of the program from fall 1982 to spring 1986 is presented as a timeline, and various program statistics are also provided. The appendices, which make up the major part of the report, include: (1) the original program proposal; (2) a letter requesting that the proposal be considered; (3) comments on the proposal from the State Department of Education and Cultural Services; (4) an outline for an introductory course in educational computing; (5) outlines for both introductory and intermediate educational computing courses; (6) radio public service announcements used to announce the program; (7) a detailed proposal for a program for certification in educational computing; (8) correspondence with the State Department of Education and Cultural Services relating to teacher certification for graduates of the program; (9) correspondence relating to the termination of the program; and (10) outlines for an intermediate course and an advanced course. (MES)

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ED287456

University of Maine
Presque Isle

Educational Computing

Impact Statement

Prepared by
Dr. Andrew R. J. Yeaman
1986

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IMPACT STATEMENT

PROPOSED ELIMINATION
OF THE
EDUCATIONAL COMPUTING PROGRAM

Dr. Andrew R. J. Yeaman
Coordinator of Educational Computing

The Educational Computing Program at the University of Maine--Presque Isle has been in place for such a short period of time that the impact of its elimination will be minimal. However, the statements below reflect the likely outcomes.

Impact on the campus mission

The elimination of the Educational Computing program will affect the campus mission of bringing innovative technology to a rural area.

Impact on students in Department, College and University

At the departmental level students will be affected on an individual basis:

- Two students will gain teacher certification in Mathematics and a Computer Science Minor.
- One student has been offered the opportunity to complete the degree by substituting Computer Science courses for Educational Computing courses but this will not lead to his goal which was Teacher Certification.
- One student transferred to a Bachelor of Science in Computer Science program on another campus.

- Two students are changing their Secondary Education major: One to Mathematics and one to History.

- One student changed major to Elementary Education.

At the college level Education students will have to obtain their computer experience in Computer Science or other education courses. They will not have the integration of education and computer knowledge contained in an Educational Computing course. In addition, Educational Computing courses will not be available for practicing teachers wishing certification credit.

At the University level, students outside of education interested in taking Educational Computing course as an elective will no longer have that opportunity. Educational Computing also had a potential audience in the business community for persons interested in training and development. This potential will not be fulfilled.

Impact on faculty

The one tenure-track faculty member will have work obligations end on May 31, 1986.

Impact University wide

This will eliminate the Bachelor of Science degree in Educational Computing from the degree offerings of the University of Maine as only the Presque Isle campus offered the degree.

Impact on facilities and budget

The Coordinator recommends that resources and facilities be allocated to Academic Computing for management. Academic Computing has a system in place for administering the software collection and for maintenance and security of hardware.

1. How does the recommendation to eliminate fit within institutional priorities?

A program with the small number of declared majors like Educational Computing (see statistics below) is not fiscally viable.

2. What was the program's history?

HISTORY OF THE PROGRAM
TIME LINE

Fall	1982	Survey distributed to assess need for proposed major (See Appendix A).
Spring	1983	Intent to Plan filed for a Major in Educational Computing (See Appendix A).
Fall	1983	Proposal reviewed by UMPI Curriculum and Standards (See Appendix B).
Jan.	1984	Proposal submitted to Department of Education for review as a certificate area (See Appendix C).
Spring	1984	Complete proposal submitted to Provosts Office. (See Appendix A).

Spring 1984	Proposal reviewed and funds allocated by Chancellor's office to hire a Coordinator/Assistant Professor of Educational Computing.
Oct. 1984	Coordinator/Assistant Professor of Educational Computing hired.
Nov. 1984	Coordinator begins publicity efforts with news releases and submits copy to Public Relations for a program brochure.
Spring 1985	First course in Educational Computing offered (See Appendix D).
May 1985	In-house program brochure completed by University Public Relations.
July 1985	Annual Report submitted to President's Office (See Appendix E).
Fall 1985	Two courses in Educational Computing offered (See Appendix F).
Oct. 1985	Coordinator develops media publicity campaign (See Appendix G).
Oct. 1985	Coordinator develops Certificate for Practicing Teachers: A non-degree certificate to increase enrollment (See Appendix H).
Nov. 1985	Request submitted to Department of Education for certification in the area of Educational Computing (See Appendix I).
Nov. 1985	Program terminated (See Appendix J).
Spring 1986	Two courses in Educational Computing offered (See Appendix K).
Spring 1986	Impact statement on proposed elimination prepared.

Budget

(The Coordinator did not have budgetary responsibilities.)

3. What is the rationale for the elimination of the program?

The rationale for elimination of the program is the lack of declared majors (See Appendix L).

4. What is the plan for faculty retrenchment and/or development?

The faculty member's contract will not be renewed (See Appendix L).

5. How will funds be reallocated?

(The Coordinator has no information regarding this question.)

6. What is the timetable for closeout?

The last course in Educational Computing was offered in the Spring of 1986 and the faculty member will have work obligations end May 31, 1986.

EDUCATIONAL COMPUTING
PROGRAM STATISTICS

Faculty: One assistant professor assigned to teach three courses and coordinate the program.

- Spring 1985--25% Coordinator
  25% Educational Computing
  50% Computer Literacy (not part of Educational Computing degree)

- Fall 1985--25% Coordinator
  50% Educational Computing
  25% Computer Literacy (not part of Educational Computing degree)

- Spring 1986--25% Coordinator
  50% Educational Computing
  25% Computer Literacy (not part of Educational Computing degree)
  Overload--One course in Computer Literacy

Enrollment in courses:

	Number of Students
• Spring 1985	
COS 196 (Intro. to Ed. Comp.)	10
• Fall 1985	
EDU 160 (Intro to Ed. Comp.)	25
EDU 161 (Intermediate Ed. Comp.)	2
• Spring 1986	
EDU 161 (Intermediate Ed. Comp.)	3
EDU 250 (Educational Programming)	5

Declared Majors:

	Number of Students
• Fall 1984	2
• Spring 1985	2
• Fall 1985	6

APPENDIX A

Return to Provost's Office

I. PROGRAM TITLE

BACHELOR OF SCIENCE IN EDUCATIONAL COMPUTING

II. PROGRAM OBJECTIVES:

A. Program Rationale

The rapid development of microcomputer technology, coupled with the availability of inexpensive microcomputer hardware and software, has stimulated a movement to integrate computers into the school curriculum. Evidence for this movement is apparent from the fact that in 1981 only one state required by law the instructional use of computers in its schools, while by the fall of 1983, five additional states had enacted similar legislation and comparable action is anticipated in several other states. Most schools lack teachers who have a background in educational computing, but personnel with this expertise are needed to work with students and teachers in structuring computer related learning activities. Many schools are using in-service training of teachers as a stop-gap method for developing this needed expertise. However, to become proficient in educational computing, one must devote substantial time and effort to learn appropriate computer skills fully and to become knowledgeable in the selection and use of computer hardware and software. The brief time normally allotted to in-service education is not adequate for developing the thorough competence in educational computing necessary to meet the demands of the rapidly developing discipline of academic computing at the pre-college level.

To encompass all of the competencies which are needed of a teacher of educational computing will require intense training of individuals at the pre-service level. Consequently, the Divisions Mathematics/Sience and Education/Health Physical Education and Recreation at the University of Maine at Presque Isle proposes a new major in educational computing whose goals, objectives and academic structure are herein outlined.

The graduates of this program will be computer educators--not computer scientists. Their primary responsibilities will be to teach computer skills to students at the secondary level, to serve as resource persons to teachers and staff and to direct a computer center or laboratory. Students enrolled in the educational computing major program will be required to select an academic minor to enable them better to meet the academic needs of the school system. Furthermore, they will complete all the general and professional education requirement of the BS degree to assure they are well educated in both an academic and professional sense.

B. Program Goals

The proposed program in educational computing is designed to prepare individuals to become effective teachers of computer related skills. The goals of the program are to enable the students to:

1. Acquire the intellectual, technical and educational background in computer skills and instructional computing that will assist them in providing pre-college students with the skills needed to handle effectively computer

resources and electronic information.

2. Interact and assist other teachers and staff with integrating the use of the computer and related technologies into their classes.
3. Be competent in directi g a school computer facility and computer related curricula for a school or a school district.
4. Select and produce educational software to meet the needs of teachers and students with different learning abilities and interests.
5. Keep abreast of changes in learning strategies by means of the computer and related technology and be able to assist in appraising the impact of these changes on all facets of the pre-college curriculum.
6. Assist business faculty and the school administration with their computer needs.
7. Acquire a good general education by exposure to knowledge across the disciplines.
8. Develop competency in another academic discipline through a minor sequence.

Taylor and Poiret reported the results of their recent survey of academic computing in public schools in the United States at the National Educational Computing Conference held in Baltimore, Maryland, June, 1983. Excerpts from this report are attached as Appendix I. The survey of leaders in the field of computer science education sought views on issues and curriculum matters relating to pre-college educational computing. The goals

of our program are consistent with the findings of this survey.

Another issue addressed in the Taylor and Poiret survey was teacher certification. They found that at the present time only five states have guidelines for certification in the field, and they recommend that all states adopt standards for certification in the near future. A secondary goal of our program is to encourage and work with the Maine State Department of Education to develop guidelines for certification of teachers in pre-college educational computing. We have already taken preliminary steps in this process and are now working on this matter with appropriate personnel in the State Department of Education.

C. Competencies of an Educational Computing Major

To accomplish the stated program goals, educational computing majors will be expected to achieve quality performances in the following competencies:

1. Use and awareness of a diversity of hardware and software to the extent needed to evaluate computer technology as it is developed and introduced. With this knowledge and experience, the computer educator will be able to select appropriate computer related hardware and assist teachers in the evaluation, selection, and and development of instructional materials. Upon completion of the program, the prospective computer educator will be able to provide the leadership needed to revise a high school's curriculum to reflect computer capabilities and availability.

(A)

2. The ability to manage the educational computing

environment. This ability involves helping to acquire and organize a school or school district's software, hardware, and related computer materials.

3. The ability to teach students how to use the computer and related technologies as educational resource tools.
4. Awareness of the numerous uses of the computer for learning the various disciplines. Familiarization with information and quantitative study techniques in several school subjects will aid the computer educator in teaching in his/her own courses and in assisting others in integrating computers into specific curriculum areas.
5. The ability to write well structured computer programs in several languages including a machine language. This proficiency is essential for a teacher of educational computing who will be instructing students and assisting teachers and administrators with programs.
6. The ability to assist others in designing and developing a variety of computer assisted instructional materials, such as drill and practice, programmed instruction, graphics and simulation.
7. The ability to communicate to others the impact of computer technology on society, such as the effects on governments, careers, information processing, personal behavior and learning.
8. The ability to establish and/or maintain a computer facility and make minor adjustments or repairs to the hard-

ware. Knows when to have repairs and maintenance performed by trained service personnel.

9. Acquisition of the overall knowledge, skills, attitudes and competencies which are expected of our pre-college teachers. The computer educator will have the ability to apply problem solving techniques to a wide range of of situtations.
10. Awareness of other developing technologies like the laser video disc player and can interface the systems with computers to expand greatly the educational tools available to teachers and students.
11. Acquisition of a broad general education by satisfactory completion of the requirements of the BS general core.
12. Acquisition of knowledge in another academic discipline resulting from the completion of the requirements of an academic minor.

III. EVIDENCE OF PROGRAM NEED

A. Educational, Economic, and Social Needs

To obtain an assessment of the potential need for our proposed major, a survey was designed and distributed in the fall of 1982. A copy of the survey instrument is attached as Appendix II. The survey was sent to 140 superintendents and 150 guidance directors in the State of Maine. The survey of superintendents revealed that approximately 230 computer educators can be employed in public schools in Maine over the next five years. Dr. John Strange, President of Acadia Educational Enter-

prices, a computer consultant firm, recently told us he could place 400 graduates of this program in two weeks.

Eighty percent of the guidance directors responding to the survey indicated there is student interest in the program, and they would recommend that students pursue an educational computing major. Further pressure for the development of such a program will come from legislative actions (as noted in II A) and from public concerns; the 15th Annual Gallup Poll of Public Attitudes Toward the Public Schools revealed that 81 percent of the public school parents wanted their children in schools which have computers.

B. Availability of Similar Programs

At the present time, there are no degree programs within the State of Maine which are specifically designed to prepare prospective pre-college teachers as computer educators. There are two programs (USM, UMO) which offer majors in computer science, but these programs are oriented to training non-teaching professionals. Within the state, most of the current training of pre-college teachers in educational computing subject matter is at the very ineffective in-service level. To our knowledge, this proposed program is among the first in the USA developed totally with the specific objective of training pre-college computer educators.

C. Enrollment Projections

Since knowledge of and experience with computers and related technology will be in high demand during the foreseeable future, prospective pre-college educators will find these skills greatly enhance their job and career opportunities. Consequently, we

expect that student demand for the program will be high. To meet partly the identified need for educational computing teachers as well as anticipated student demand for training in this field, we have designed a program with the following projected enrollments:

TABLE I

YEAR	ENROLLMENT
1984	20
1985	37
1986	52
1987	64
1988	64

(E)

This enrollment profile assumes that 20 students will be admitted to the program each year, and the attrition rate is projected at 15 percent per year. A program serving this number of majors can be very adequately supported and maintained by our present and projected resources.

IV. PROGRAM CONTENT

A. Program Characteristics

To develop the essential competencies of a computer educator as indicated above, the program was designed with the following basic components in mind:

(F)

See the last of my comments under F.

1. In-depth survey of computer literacy and the impact of computers upon society;
2. Experience in computer programming in several languages including a machine language;
3. Managing a computer facility and its resources;
4. Applications of the computer and related technology

in a variety of subject areas including methods of teaching appropiate computer skills;

5. Selection, evaluation, and development of instructional software;
6. Use of the computer and related technologies as a professional tool, such as information retrieval, word processing, and data management;
7. Research on learning, teaching, and curriculum development using instructional computing;
8. Exposure to a variety of computer systems and related technologies similar to those soon to be found in the schools;
9. Field experiences and student teaching to allow prospective teachers to demonstrate proficiency in instructional computing and to work with students and teachers in a pre-college computer facility.
10. The university BS general education core requirement.
11. The professional education core requirement.
12. An academic minor.

B. Program Outline

The proposed curriculum in educational computing will consist of the sequence of courses given in Table II. A sample four year curriculum plan is outlined in Table III.

C. Research Activities

Not applicable.

D. Practical Experiences

Practical experiences have been designed into the program.

TABLE II

EDUCATIONAL COMPUTING MAJOR

PROGRAM OUTLINE

MAJOR:*

Cos 120 and 121, Introduction to Educational Computing, I & II	6 credits
Cos 125, Introduction to Business Computing	3 credits
Cos 220 & 221 Advanced Programming I & II	6 credits
Cos 250 Information Processing	3 credits
Cos 320 & 321 Computer Electronics and Architecture I & II	8 credits
Cos 400 Managing a Microcomputer Facility and Resources	3 credits
Cos/Mat 300 Algorithms	3 credits
	Total 32 credits

Other Requirements **

Mat 31 Calculus I	4 credits
Mat 74 Linear Algebra	3 credits
Phy 245 LL Introduction to Physics	4 credits

MINOR:	18-21 credits
GENERAL EDUCATION CORE:***	35 credits
PROFESSIONAL EDUCATION CORE:***	37 credits
ELECTIVES:	3-6 credits
	Total 128 credits

* A tentative, conceptual course description for each proposed new course is given in Appendix III. A final, detailed course description, course outline, and supporting information will be prepared by the individual first responsible for teaching each course. Each proposed new course will be submitted for evaluation and action by the UMPI University Senate.

** These courses meet a portion of the general education core requirements.

*** See Appendix IV.

TABLE III

(F)

EDUCATIONAL COMPUTING MAJOR

A FOUR YEAR CURRICULUM PLAN

FRESHMAN YEAR

Fall		Spring	
Cos 120 Int. Ed. Comp. I	3	Cos 121 Int. Ed. Comp. II	3
Eng 1 Comp. & Lit. I	3	Cos 125 Int. Bus. Comp.	3
Mat 31 Calculus I	4	Mat 74 Linear Algebra	3
Edu 50 LL Exp. Cont. Ed.	4	Eng 2 Comp. & Lit. II	3
Soc. Science Elective	3	Psy 61 Gen. Psychology	3
	17		15

SOPHOMORE YEAR

Cos 220 Adv. Prog. I	3	Cos 221 Adv. Prog. II	3
Edu 100 LL Learn & L. Pro.	3	Cos 250 Inf. Processing	3
Spe 6 Public Speaking	3	Phy 245 LL Int. Physics	4
Minor (2)	6	Edu 186 Mainstreaming	3
		Minor	3
			16

JUNIOR YEAR

Cos 320 LL Comp. Elect. I	4	Cos 321 Comp. Elect. II	4
Edu 110 Teaching Process	3	Edu 153 Read. Cont. Area	3
Cos/Mat 330 Algorithms	3	Fine Arts Elective	3
Humanities Elective	3	Minor (2)	6
Minor	3		16

SENIOR YEAR

Educational Methods	3	Edu 195 Student Training	15
Cos 400 Mgt. Comp. Fac.	3		
Har 24 Princ. Health	2		
Social Science Elective	3		
Free Elective	3		
Minor	3		
	17		15

NOTE: This curriculum outline uses the new system wide 3-letter describers.

The student training experience represents the major activity of this type. The student will also get considerable practical experience in the laboratory component of the courses Phy 145, Cos 320 and Cos 321 and the course Cos 400, Managing a Micro-Computer Facility and Resources.

E. Impact of the Program

In September 1981, the University of Maine at Presque Isle implemented a new core for the BA degree program which requires that students take a course in computer literacy or a foreign language. In August 1981, we purchased our first microcomputers for use in a course designed to meet this core requirement. We also began to advocate a philosophy of integrating microcomputer technology into the mainstream of our academic programs. The implementation of the educational computing major will greatly expand the staff, hardware and software resources available on the campus to all students. This will add a significant impetus to our efforts to make computers and related technology readily available to all segments of the University community.

V. PROGRAM RESOURCES

A. Personnel

We will employ a person trained in the field of professional education who also has a strong background in computer education/ science. This faculty member will teach some of the new computer courses, the methodology courses, provide the needed supervision of practicums, act as the liason with the public schools and be the program coordinator. Three members of the Division of Mathematics and Science now teach computer related courses and a

fourth faculty member will be employed beginning January, 1984, who is qualified to teach computer courses. We anticipate that these four individuals will teach courses proposed for the major in educational computing. We will employ highly qualified faculty at NMVTI to teach the courses in Computer Electronics and Architecture.

B. Library Acquisitions

Presently our library has many of the necessary journals, such as "The Computing Teacher," "Byte," "Educational Technology" etc. A summary of our present library holding in the field of computer science and technology is given in Appendix IV. We will add new books and periodicals to the collection as rapidly as their need and value to the program are recognized.

C. Needed Equipment and Software

When fully implemented the program will require a minimum of 20 fully equipped microcomputers to provide the proper access time for students and staff. By January, 1984, we will have ten Apple 2+/2E computers, two letter quality printers, three dot-matrix printers, a graphics tablet, a graphics plotter, and considerable representative software. Each microcomputer is equipped with dual disk drives and maximum memory capacity. During the 1984-85 academic year we will purchase an additional 10-15 microcomputers and associated hardware/software using funds from a Title III grant and an already committed allocation from the Central Office.

We anticipate that a number of the new microcomputers will

students have a working knowledge of the different types of hardware and software which will be found in school systems.

We presently have four multiplexer ports to the University system mainframe computer which are dedicated to academic computing. We will expand to at least six ports as the demand for mainframe access increases.

D. Facilities

Our current academic computing center was recently renovated to provide a well designed efficient facility. The center is open daily from 7 a.m.- 10 p.m. One classroom for group instruction, is equipped with a large screen, high resolution color monitor and access ports to the mainframe. The monitor can be used in conjunction with the mainframe or a microcomputer. We anticipate the renovation of an additional room by June, 1985. This room will provide office space and a secure area for keeping items like a graphics plotter for which we may wish to limit access. We plan to distribute a number of the microcomputers to strategic locations around the campus like the library, the faculty office building, and the Honors Center. NMVTI has a well equipped laboratory for instruction in computer electronics and related topics and we will arrange to use that facility for teaching the Cos 320/321 courses.

E. Cooperation with Other Institutions

In addition to capitalizing on the expertise of the computer knowledgeable faculty at the University of Maine at Presque Isle, we have worked with personnel at CAPS. We are also working with personnel at NMVTI to utilize their extensive resources for the

computer electronics courses. We have consulted with Dr. Harriet Taylor, Louisiana State University and Dr. John Strange, President, Acadia Educational Enterprises and an expert in the area of using microcomputers in the educational field. We have sought and secured information on certification from several states and we are working with the Maine State Department of Education to develop certification guidelines for this new discipline.

VI. FINANCIAL CONSIDERATIONS

A. Anticipated Costs and Income for Five years

The enrollment of 20 new full time resident students in the first year, will generate $30,100 at our present tuition rate. This will increase and stabilize at $96,500 per year in four years based on our enrollment projection and assuming no increase in tuition. This will generate a total income of $357,000 over a five year period.

When fully implemented, the equivalent of three and one half full time faculty will be assigned to the program. This will require approximately $80,000 based on present salaries and miscellaneous expenses. An additional $10-15,000 will be used for the purchase and maintenance of appropriate hardware and software each year.

B. Detailed information on first year costs:

1. Expenses:

a.	Personnel - Faculty member	$25,000
b.	Equipment	$10,000
c.	Software	$ 5,000
d.	Maintenance of Equipment	$ 4,000
e.	Supplies	$ 5,000
	Total	$49,000

Funds for items a, b and c have been identified in conjunction with our Title III grant and a committed special allocation from the Central Office. The additional costs (d, e) will be covered by the anticipated new income.

2. New Income

The anticipated income from the program in the first year is $30,100 as noted in VI A.

VII. PROGRAM EVALUATION

Formative evaluation for the program will be developed prior to program implementation in Fall, 1984. Such evaluation will include outside consultation. The evaluation will include a study of program goals and objectives and the development of a process for measuring how well those goals are met.

Summative evaluation will be conducted at the end of the first academic year with a study of outcomes and every three to five years thereafter. A committee including the Division Chairperson, program faculty, two students, and outside consultants will develop the formative and summative evaluation schedules.

APPENDIX I

EXCERPTS FROM STUDY BY TAYLOR AND POIROT

The Certification of High School Computer Science Teacher

Harriet G. Taylor
Dept. of Computer Science
Louisiana State University
Baton Rouge, LA 70803

James L. Poirot
Dept. of Computer Sciences
North Texas State University
Denton, TX 76203

In the fall of 1982, a study investigating the certification of high school computer science teachers was begun. The first part of the study consisted of a survey of the chief teacher certification officer in each state to determine each state's position on the certification of high school computer science teachers. The second part of the study involved a survey of thirty-nine selected leaders in the field of computer science education. The leaders expressed their views about present and future directions of computer science education, especially the need for teacher certification. They also selected a group of courses for an ideal teacher certification program. This paper is devoted to the presentation of the results of both surveys.

Survey of State Certification Officers

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Excerpt 1

In summary, it appears that little progress has been made in terms of the number of states that offer computer science teacher certification. The most substantial apparent result is an increased awareness of the growing demand for computer science in the secondary school and the responsibility of the states to insure the quality of the preparation of teachers assigned to teach such classes.

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Excerpt 2

Survey of Leaders in the Field of Computer Science Education

A survey instrument was sent to forty selected leaders in

the field of computer science education. The group was comprised of individuals from twenty-one states and the District of Columbia. It included over twenty college professors, all currently active in the field, officers in most of the national education computing organizations, editors of several major educational computing journals, five nationally recognized high school teachers, instructional computing consultants to major school districts, and authors of books on many aspects of educational computing. Most of those included in the sample were major contributors of research and knowledge to the field and have been widely published.

It is of great significance that all but one of the group of forty leaders responded to the survey. A reasonable conclusion could be reached that the unusually large percentage of returns was due to the perceived importance of the issues at hand. The group assembled represented some of the best expertise available to answer the questions at hand. The group expressed strong and definite opinions which are due a great deal of consideration.

General Issues in Computer Science Education

The first part of the instrument dealt with general issues in computer science education. Respondents were asked to express their opinions to eighteen issues using a five point scale.

Over 75 percent of the 39 respondents agreed with 12 of the items. All of the respondents agreed with one of these twelve and over 90 percent agreed with four items.

The areas of agreement all point toward strong feelings about the emergence of computer science as a discipline in the high school and about the certification of high school computer science teachers. To summarize these findings, the leaders agreed that:

a) Computer science is a distinct discipline not a part of any other subject.
b) Basic computer literacy should be required of all high school graduates.
c) Certification of high school computer science teachers is a national problem that demands immediate attention.
d) By 1990, the first year computer science courses now being taught in most colleges and universities will be taught in the high school.
e) Cost of computer hardware is no longer a major deterrent to the introduction of computer science in the high school.

f) More indepth training is needed for a teacher who will teach about computers than one who simply uses computers in the classroom.
g) Most parents feel that computer education should be part of their child's general education.
h) Colleges and universities must act quickly to develop computer science education programs to train prospective teachers of computer science.
i) Teachers of computer science should be certified in the area of computer science and not in another subject field which emcompasses computer science.
j) There is a definite downward movement of the computer science curriculum in the high school.
k) A major barrier to the implementation of high school computer science courses is the lack of supply of adequately-trained teachers.
l) Credit for a high school computer course should be given as a unit of computer science, and not as a unit of math, science, or business.

.....
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Excerpt 3

Recommendations

Based on all the evidence collected by this study, including a search of the literature and the opinions of the state certification officers and selected leaders in the field of computer science education, the following recommendations are made.

1. All states not currently offering computer science teacher certification should adopt standards in the near future.
2. Teachers of computer science should be certified in the field of computer science.
3. Educators must find a place for computer science per se in the high school curriculum.
4. Colleges and universities must act quickly to develop computer education programs to train computer science teachers.
5. All programs designed to train high school computer science teachers should include the following types of courses:

    a. A course on the materials and methods of teaching computer science that is taught by a person or group of persons who have the appropriate expertise.

b. Courses on programming applications in both Pascal and BASIC, with emphasis on programming proficiency in both languages. At least one course should include exposure to, and preferably experience in, the computer language LOGO.

c. A required component of five courses that includes:

   (1) Introduction to Programming and Algorithm Design, including programming using a high-level language;
   (2) Computers and Education, including analysis of the major instructional uses of computers;
   (3) Computers and Society;
   (4) Programming Languages, including the definition and structure of languages and comparison of existing high-level languages;
   (5) A choice of either introduction to Computer Systems or Microcomputer Systems and Application.

d. Due to its inclusion in all five current state programs reviewed, serious consideration should be given to requiring a course called Advanced Topics in Programming and Algorithm Design and Analysis, using a high-level language.

e. A group of elective courses which includes:

   (1) Advanced Topics in Programming and Algorithm Design and Analysis (if it is not required);
   (2) Computer Assisted Instruction;
   (3) Introduction to File Processing;
   (4) Data Structures;
   (5) Fundamentals of Computer Organization and Digital Logic;
   (6) Assembly Language Programming.

APPENDIX II

SURVEY INSTRUMENTS

Dear

The Division of Education/HPER in cooperation with the Division of Mathematics and Science at the University of Maine at Presque Isle is exploring the feasibility of developing an academic major in Computer Education. The curriculum of this major will be designed to train teachers who are capable of teaching computer literacy to elementary and secondary school students in the classroom setting, serve as a resource person qualified to coordinate or direct a computer center/ laboratory and assist other faculty and staff with the educational applications of computer technology. It is anticipated that students enrolled in the computer education major will be expected to have a strong background in another academic discipline, so as to better fulfill the needs of the school setting. (A)

In order to obtain an independent sense of the student interest and your assessment of demand for individuals trained as computer educators, we would appreciate it if you would take a moment to complete the enclosed questionnaire. Any additional comments you may wish to make will be helpful. To make effective use of our survey, we need to begin to summarize them by November 30, 1982. It would be helpful if you could complete the survey and return it by November 30, 1982.

Sincerely,

UNIVERSITY OF MAINE AT PRESQUE ISLE
Survey of the Demand for Computer Educatiors

The purpose of this survey is to ascertain how superintendents view the current and future needs for computer educators in their school systems.

Name: Summary School: _____

1. Do you have a current need for computer educators in your school system or district?

70 Yes 15 No

What number of positions are needed? 230

2. If your response to Item #1 is yes, at which of the following levels do you see their role?

42 elementary

45 junior high or middle school

38 senior high

31 district wide

(D)

3. Within the next 5 years, do you perceive a need for computer educators in your school district?

81 Yes 3 No

What number of positions do you foresee? 250

4. In what capacity do you see your computer educators performing best? (example: math and computer education, business and computer education, science and computer education, etc)

_____

_____

5. What are some of the general or special qualifications which you foresee for your computer educators?

_____

_____

Please return to: Dr. Jack C. Sheltmire, Chairperson, Division of Education, Health Physical Education and Recreation, University of Maine at Presque Isle, Presque Isle, ME 04769

UNIVERSITY OF MAINE AT PRESQUE ISLE
Survey of the Demand for Computer Educators

The purpose of this survey is to ascertain how guidance counselors view the interest of high school students in seeking a career in computer education and to assess the demand for computer education in the curriculum.

Name: Summary School: _____

1. Would high school graduates of your school be interested in seeking a career in education with a major in computer education ?

   65 Yes 16 No

2. Within the next two years, what number of your graduates would you predict might be interested in majoring in computer education? 260

   260

3. Would you encourage qualified high school graduates to pursue a course as a computer educator?

   79 Yes 10 No

4. Do you perceive a need for computer educators in your school system?

   75 Yes 12 No

5. In what roles do you see these educators performing? (example: math & computers, business and computer education, etc.)
   Math and Computer Education - 62
   Business " " " - 49
   Elementary Education ; CE - 36

6. Please express any additional comments that you feel will be helpful concerning computer education in your curriculum:

   _____

   _____

   _____

*Please return to: Dr. Terrance Tripp, Chairperson, Mathematics/Science Division, University of Maine at Presque Isle, Presque Isle, ME 04769

APPENDIX III

(H)

TENTATIVE CONCEPTUAL COURSE DESCRIPTIONS

Cos 120 Introduction to Educational Computing I 3 cr.

A survey of microcomputer hardware and its application to the academic environment. An introduction to computer programming with emphasis on Logo, Pilot and Basic. An introduction to microcomputer software.

Cos 121 Introduction to Educational Computing II 3 cr.

A continuance of Cos 120. Includes an introduction to mainframe computers and an emphasis on CAI. Some study of computer systems management. Prerequisite: Cos 120.

Cos 125 Introduction to Business Computing 3 cr.

Survey of accounting, inventory, business planning, and financial analysis packages. Management of information system and COBOL programming. Prersquisite: Cos 120 or Cos 101.

Cos 220 Advanced Programming I 3 cr.

In depth study of computer programming languages; Basic, Pascal and Fortran using microcomputers and mainframe computers. Introduction to assembly language and machine language programming. Prerequisites: Cos 105 or Cos 121.

Cos 221 Advanced Programming II 3 cr.

A continuation of Cos 220. Emphasis on advanced programming techniques. Includes several major programming projects. Prerequisite: Cos 220.

Cos 250 Information Processing 3 cr.

An indepth study of software used for information processing. Includes a detailed survey of word processing, spread sheet and data base management software. Prerequisite: Cos 121.

Cos 320 LL Computer Electronics and Architecture I 4 cr.

Introduction to digital circuits from gate standpoint. Emphasis on solid state devices including small and large scale intergrated circuits. Introduction to microprocesses. Practice in trouble shooting and maintenance of microcomputers. Prerequisites: Ps 145 and Cos 221. Two hours lecture, 6 hours lab.

Cos 321 LL Computer Electronics and Architecture II 4 cr

Continuation of Cos 320 with emphasis on microprocessor design and interfacing, I/O devices and control structure. 3 hours lecture, 3 hours lab.

Mat/Cos 330 Algorithms 3 cr.

Numerical analysis including interpretation and approximation, integration, solutions of nonlinear equations, and systems of equations. Discrete methods including network flows, paths, trees, graph traversal and circuits and transportation. Prerequisites: Mat 31 and Mat 74.

Cos 400 Managing A Microcomputer Facility and Resources 3 cr.

The selection and maintenance of computer hardware and software for use in school systems. Includes practical experience through assistance in managing academic computer facilities. Prerequisite: Cos 321.

Ps 245 LL Introduction to Physics 4 cr.

Selected topics in physics with the emphasis on electricity and related topics needed to understand the principles of computer electronics. Prerequisite: Mat 31. 3 hours lecture, 3 hours lab.

APPENDIX IV

GENERAL AND PROFESSIONAL EDUCATION COEE REQUIREMENTS

BACHELOR OF SCIENCE DEGREE

GENERAL EDUCATION

Eng 1, Composition and Literature I	3
Eng 2, Composition and Literature II	3
Speech Elective	3
Fine Arts Elective	3
Humanities Elective	3
Psy 61, General Psychology	3
Social Science Electives	6
Mathematics Elective	3
Laboratory Science Elective	4
Mathematics or Science Elective	3-4
Total	34-35

PROFESSIONAL EDUCATION SEQUENCE

Edu 50, Contemporary Education	3
Edu 50L, Contemporary Education Practicum	1
Edu 100, Learner and the Learning Process	3
Edu 100L, Learner and the Learning Process Lab	1
Edu 110, The Teaching Process	3
Methods Course in Major Area	3
Edu 153, Reading in the Content Area	3
Edu 186, Mainstreaming	3
Edu 195, Student Teaching	15
Har 24, Principles of Health	2
Total	37

[A] ---

Page 3, Goal #3. — "Be competent in directing ... computer related curricula for a school or a school district."

Page 3, Goal #5. — "...all facets of the pre-college curriculum."

Page 4, Competency #1. — "...the prospective computer educator will be able to provide the leadership needed to revise a school's curriculum to reflect computer capabilities and availability."

Appendix II, Cover letter for questionnaire. "The curriculum of this major will be designed to train teachers who are capable of teaching computer literacy to elementary and secondary school students in a classroom setting ..."

— The UMPI program is designed to prepare teachers of computer science at the secondary school level.

— The program lacks an elementary school perspective.

— It must be questioned whether graduates of this program should direct a K-12 facility or curriculum, or provide the leadership for using computers in the elementary school.

— If UMPI persists in claiming K-12 competencies and a "computer educator" concept, then the issue of sex equity arises (see my Comment H).

[B] —

page 3, Goal #4 — "...produce educational software."

page 5, Competency #6 — "The ability to assist others in designing and developing a variety of computer assisted instructional materials, such as drill and practice, programmed instruction, graphics and simulation."

— Local production of educational computer software should not be a priority at this time.

— Some of the high quality, commercially available software takes a team of three people a full year to produce. This software can be purchased for about $40.

— It is not financially expedient for most schools to develop software at the local level.

— However, teachers who wish to write computer software should be supported in their efforts (e.g., use of school computers during the summer), and encouraged to distribute their products through commercial publishers who can revise and field test the programs prior to widespread dissemination.

[C] —

(p. 3) — "The [Taylor & Poiret] survey ... sought views on issues and curriculum matters relating to pre-college educational computing."

— The study dealt with the certification of high school teachers of computer science. It does not deal with instructional uses of computers in the elementary schools. It does not deal with the training of district-wide, K-12 specialists.

(See Appendix I of the proposal.)

[D] ---

p. 6 — "The survey of superintendents revealed that approximately 230 computer educators can be employed in public schools in Maine over the next five years."

Note the results of Question #2 of the survey of superintendents:

"2. ...at which of the following levels do you see their role?"

Senior High	38	
Elementary.....	42	118
Junior High or Middle School.....	45	
District Wide.....	31	

The superintendents see three fourths of computer educators working at the elementary school level! But the UMPI program is training secondary education computer science teachers, people not adequately prepared to work in elementary education.

What impact can, or should, a high school computer science teacher have on the curriculum and instruction in a district's elementary school classrooms?

[E] ---

(p.9) [The program will contain]...field experiences and student teaching to allow prospective teachers to demonstrate proficiency in instructional computing and to work with students and teachers in a pre-college facility."

The proposal forecasts a senior class enrollment of 12 students per year beginning in 1987. Will there be an adequate number of high school computer facilities in the Presque Isle area to accommodate the need for field experience sites?

[F] —

(p. 11) -- Educational Computing Curriculum Plan

Appendix III — Tentative Conceptual Course Descriptions

ANALYSIS OF THE CURRICULUM CONTENT

TOPICS	COURSES	CREDITS
COMPUTER LANGUAGES: (9 cr.)		
Basic, Pascal, Fortran, Assembly Language, Machine Language, Special Projects	COS 220 COS 221	3 3
Logo, Pilot, Basic (+ hardware/software)	COS 120	3
(Also some COBOL in COS 125)		
HARDWARE DESIGN/FUNCTION, MATH, PHYSICS: (15 cr.)		
Computer electronics, computer architecture, maintenance, design.	COS 320 COS 321	4 4
Algorithms	COS 330	3
Physics — computer electronics	PS 245	4
SOFTWARE: (6 cr.)		
Business Computing (+ COBOL programming)	COS 125	3
Infomation Processing	COS 250	3
(Also some software in COS 120, COS 400)		
COMPUTERS IN EDUCATION: (6 cr.)		
CAI (+ mainframe computers) Facilities management	COS 121 COS 400	3 3
(Also an education emphasis in COS 120)		

(SEE NEXT PAGE FOR COMMENTS)

— From the course descriptions, it is difficult to tell the extent to which computing in educational settings is emphasized.

— The curriculum appears suited to the primary responsibilities of the graduates, as stated on page 2 of the proposal:

> "...to teach computer skills to students at the secondary level, to serve as resource persons to teachers and staff and to direct a computer center [presumably high school!!] or laboratory."

— Two thirds of the credits for major courses are in the areas of computer programming, computer hardware, math, and physics. Adequate coursework for the preparation of elementary school personnel is missing, e.g., one or two courses in the LOGO programing language, a course in the evaluation of computer software, techniques for integrating computers into the elementary school curriculum.

— Computer programming, systems, and technology comprise only <u>two</u> of the "basic components" of the program (p.8, #2; p.9, #8). Meanwhile, these areas constitute about two-thirds of the major coursework.

[G] —

p. 12 — "We will employ a person trained in the field of professional education..."

— The existing COS faculty have mathematics, not education backgrounds. I commend UMPI for realizing that they need a professional educator to be the program coordinator, and to act as the liason with the public schools.

— Ideally, this person should have professional training and experience in curriculum development preschool to college, a working knowledge of all modern educational media and technology (with recent updating in computers), demonstrated competence in teaching at the elementary, secondary, and college levels, and experience as an administrator of a media technology program. It would be difficult to hire the rare individual who possesses all of these characteristics, but for a full professorship and the raise in pay I'd seriously consider the position.

[H] —

A crutial issue not addressed in this proposal is the matter of sex equity. The strong mathematics/secondary education emphasis of this program would appeal primarily to male students. This program would promote the dominance of men in the computers in education field.

The University of Maine needs to offer a computers in education curriculum, at the graduate level, which would appeal to teachers of both sexes at all grades and all subject areas. Such a graduate program should minimize mathematics, and emphasize computers as tools in instruction and daily living.

UNIVERSITY OF MAINE *at Farmington*

DEPARTMENT OF SCIENCES AND MATHEMATICS
Biology
Chemistry
Geology
Mathematics
Physics

112 Main Street-Learning Center
Farmington, Maine 04938
207-778-3501

7 February 1984

MEMORANDUM

To: Provost Howard Sachs

From: Ernest Hannon E.H

Re: UMPI'S BACHELOR OF SCIENCE IN EDUCATIONAL COMPUTING

I have read the proposal and have the following observations:

1. The proposed program is reasonable for a B.S. Degree and would adequately prepare its graduates to function as computer educators.

2. Proposed staff and equipment support should be adequate for the enrollment levels indicated. I would, however, encourage UMPI to increase the equipment support as soon as resources become available.

3. Employment opportunities for its graduates within Maine would depend on the state offering computer science teacher certification. Therefore, it would seem prudent for the University to coordinate approval and/or implementation of this program with the State of Maine offering such certification.

4. A file management/data structure course is becoming an increasingly popular offering at the high school level. I would recommend that UMPI offer such a course to students in this program as soon as staffing permits.

5. Since course transferability problems have haunted the University, it should be made clear to students entering this program that many of its courses, because of their education emphasis, will not in general transfer credit towards a computer science major at other institutions.

If I can provide any additional information, please contact me.

EH/g

UNIVERSITY OF MAINE

MEMORANDUM

TO: Catherine Fogler Quinlan
Assistant Director for Academic Planning

FROM: Gerald Lee Lohse
Assistant Professor of Forestry and Computer Center Director

DATE: 20 March 1984

SUBJECT: UMPI Program Proposal: B.S. in Educational Computing

The idea of a computer education program is excellent! Dick Kimball has done a commendable job addressing computer education needs for the State of Maine. Also, this is the first program of this nature in the United States and could be received quite well outside the State of Maine.

However, the curriculum for the Educational Computing major does not address computer education per se but rather computer science. It only differs from the Computer Science major at UMO by six (6) credits and a specified concentration area of Education rather than Business, Electrical Engineering, or Mathematics.

I concur with Ralph Granger that the emphasis of the major should be on using the computer as an educational tool to develop problem-solving skills, logical thinking and analytical reasoning. No unique computer education courses are included in the major to meet these needs. In fact, Appendix VII, Vita of Program Support Faculty, does not include any faculty with expertise in educational computing (or even in education for that matter) which suggests that the program proposal is extremely limited in scope by the backgrounds and experience of Mathematics-Science Division faculty.

A revised curriculum is included for discussion as well as my comments on the proposal.

Another approach to computer education could be a master's program in Computer Education. A summer session program, administered by the Graduate School of UMO or USM, could give M.S.A.D.'s a means to retrain existing teachers to implement computer education programs rather than hire an additional person.

I hope my criticism of the proposal is taken in the spirit in which it was intended. I heartily recommend that the computer education needs of Maine be addressed. A recent survey in Learning ranked Maine 35th among all states in instructional computing. Obviously there is room for improvement.

GLL/dm

Encs.

Suggested Revisions for
Educational Computing Major
Program Outline

MAJOR:

(9) Computer Programming

Cs 83*	Introduction to Computer Science I	3
Cs 182*	Introduction to Computer Science II	3
Cs 186*	Programming Languages	3

(10) Business Administration

Bus 18*	Business Data Processing	3
Ba 147*	Business Information Systems	3
Cos 400	Managing a Microcomputer Facility and Resources	4

(12) Computer Enhanced Education

Cs 161*	Interactive Computer Graphics	3
IDL 183*	Computers and Society	3
Cos 120	Introduction to Educational Computing I	3
Cos 121	Introduction to Educational Computing II	3
	TOTAL	31

Other Requirements

Sta 101	Probability and Statistics (Math General Education elective)	3
Eng 70	Report Writing (Humanities General Education elective)	3
Hy 120*	History of Science (Social Science General Education elective)	3
Edu 126	Instructional Media (Professional Education Sequence Methods course)	3

*Course is listed in UMO catalog

dm
3/20/84

Course Descriptions

Cs 83 Introduction to Computer Science I - Stresses programming logic and techniques with a brief introduction to hardware concepts. Students are assigned programs emphasizing numerical algorithms for implementation in a higher level language. (PASCAL) 3 credits

Cs 182 Introduction to Computer Science II - Continuation of Cs 83 with emphasis on the development of non-numeric algorithms. Topics include program efficiency, text processing, sorting and data structures. (PASCAL) 3 credits

Cs 186 Programming Languages - Formal description of programming languages including specification of syntax and semantics. Discussion of infix, prefix, postfix notation with translation techniques. Topics include branching, grouping of statements, storage allocations, list and string processing, and relation of language design on efficiency. (Some machine and assembly language instruction) 3 credits

Bus 18 Business Data Processing- Introduction to the principles and techniques of electronic data processing, including history and progression in types of data processing equipment, principles of the components and operations of computers, and introduction to programming languages. (COBOL, RPG II, plus Advanced BASIC) 3 credits

Ba 147 Business Information Systems - The role of information systems and data processing in business planning and control. Technology of information systems, economics of information, planning, decision making and control in business organizations. Simulations and other computer applications in business (including word processing, spread sheet and data base management software). 3 credits

Cos 400 Managing a Microcomputer Facility and Resources - The selection and maintenance of computer hardware and software for use in school systems. Includes practical experience through assistance in managing academic computer facilities (and practice in trouble shooting and maintenance of microcomputers). (2 lectures - 6 labs) 4 credits

Cs 161 Interactive Computer Graphics - Topics include graphic I/O devices: plotter, CRT, light pen, etc.; vector generation; transformation of two/and three dimensional objects; clipping and windowing; hidden line removal; interrupt handling; interactive techniques; data structures for graphics; and various display alogrithms (emphasis on microcomputers). 3 credits

IDL 183 Computers and Society - Consideration of the human and social consequences of the technological development and application of computers as viewed from the standpoints of the computer customer, the computer specialist and the public. 3 credits
(See attached example syllabus)

Cos 120 Introduction to Educational Computing I - A pragmatic survey of curriculum ramifications via computer education for the student, teacher, and administrator. Lab sessions cover effective K-12 microcomputer use as a teaching tool in language arts, mathematics, social studies, science, foreign languages, and special education. Discussions cover modifications of the learning environment with problem-solving software tutorials, simulations and educational games as well as software evaluation methods. 3 credits

Cos 121 Introduction to Educational Computing II - An understanding of the components of computer-enhanced education: curriculum, staffing and implementation. Topics include how to use Logo and Pilot to outline and develop a lesson plan sequence on the computer and how to design curriculum models to integrate computers into the content areas. 3 credits

The proposed Educational Computing major program outline on pages 10-11 and Appendix III does not reflect instructional applications of the computer in the classroom. The program is also inconsistent with the guidelines outlined in Appendix I excerpt 3 that recommends

"....c. A required component of five courses that includes:

(1) Introduction to Programming.....;
(2) Computers and Education, including analysis of major instructional uses of computers;
(3) Computers and Society;
(4) Programming Languages, including the definition and structure of languages and comparison of existing high-level languages;
(5) ..... or Microcomputer...Application."

My suggested revisions include a course in each of the five areas as well as courses which reflect the content of the additional suggested elective courses.

Computers and Society is an extremely important course to understand the social consequences of a high-tech society. It was omitted in the draft.

I revised the course description of Cos 120 and 121 to reflect the intended spirit of this requirement as recommended by the Taylor and Poirot Study in Appendix I.

Courses with an asterisk (*) in my suggested revision were obtained from the UMO catalog in an effort to standardize the content of the courses and enhance transfer of credit among the campus in the University of Maine System.

Under the requirements outside the major, I suggest requiring Statistics, Report Writing, History of Science and Instructional Media. I have difficulty comprehending why statistics was omitted from the curriculum at the dawn of an information era. Also Instruction Media would seem to facilitate the instructional use of A-V materials into the computer enhanced curriculum. For example, a video cassette series could be developed in a school system to train students how to use a word-processor.

dm
3/20/84

Comments on the Intent to Plan
for UMPI Major in Educational Computing

Page 1

[A] -- Program Rationale
See report from a Nation Survey on School Microcomputer Use Issue No. 2, June 1983; Center for Social Organization of Schools; John Hopkins University, Baltimore, MD 21218.

Less than 10% of all elementary and high schools in the United States have two or more qualified computer education teachers.

Page 1, 7

[B] -- Program Rationale
Current ACM and ICCE guidelines recommend 6 semester hours of college credit (120 contact hours) as minimum instruction in computers for teachers. Instruction is divided into programming, computer literacy, and applications.

Page 2

[C] -- Program Rationale
How does a computer educator differ from a computer scientist? Will the graduate from this program teach computer science to students or teach other teachers how to use the computer in their classrooms or both?

(See attached Survey of Microcomputer Uses in Schools)

Page 3

[D] -- Program Goals
I suspect Maine School Administrative Districts will opt to retrain current faculty in computers via recertification rather than hire someone to implement computer education programs in the district.

Page 3, 5

[E] -- Program Goals
Producing educational software is not cost effective!

Page 3

[F] -- Program Goals
Good point! It is a very time consuming task to keep abreast of changes in computer technology. The next generation of computers may make programming obsolete at the introductory level!

Page 3

[G] -- Program Goals
Assistance of business faculty and administration should be emphasized to enhance job prospects upon graduation.

Page 5

[H] -- Expectations of Program Graduates
Courses in the program do not appear to provide competency in this area.

Page 8

[I] -- Program Content
See attached course description for a separate course on Computers and Society. Again, this material does not appear to be emphasized in any of the course descriptions.

Page 9

[J] -- Program Content
A course in Methods of Media or Instructional Method or Preparation of A-V Materials should be required.

Page 9

[K] -- Program Content
Student teaching will be a big plus to graduates from the program. Hopefully there will be enough sites near UMPI to accommodate all students.

Page 12

[L] -- Personnel -- If the new person has academic release time to coordinate the program, how will all the new courses be taught? Every other year?

Page 13

[M] -- Library Acquisitions -- I suggest expanding periodicals to include ACM and ICCE publications as well as to supplement book holdings with Computers and Society titles.

Page 13

[N] -- Equipment -- Color monitors are essential for elementary education software!

Page 15

[O] -- Expenses -- Unless UMPI has an adequate supply of educational software, $5000.00 will not buy much especially if they are cognizant of software copyright laws! Most centers allocate at least 40% of the budget to software, which suggests $9,000.00 is a better anticipation of actual expenditures. The difference could be collected from computer lab fees.

Also the faculty salary seems low. Salary expectations for M.S. candidates for a Math/Computer Science position at UMFK are at a minimum of $21,000. Surely a Ph.D. would be required to coordinate the program, and that will probably cost more than $25,000.00

dm
3/20/84

APPENDIX B

TO Dr. Stan Scott
Chairperson, Curriculum and Standards Committee

FROM Dr. Jack C. Sheltmire
Chairperson, Division of Education, Health,
Physical Education and Recreation

DATE November 8, 1983

RE New Major in Educational Computing

Last spring the Division of E/HPER of the University of Maine at Presque Isle submitted an "Intent to Plan" proposal for a major in Educational Computing. A considerable amount of planning and research took place prior to the development of the Intent to Plan. For example, approximately 140 school superintendents were surveyed to determine anticipated need. The superintendents responded favorably and identified the need for 370 such graduates in the next 5 years. Dr. John Strange, a recent Presidential Lecturer indicated he could now easily place 400 individuals trained in this field! Presently, there are no such programs in the State of Maine and only 4 states which certify teachers in the area of computing in the United States. This program will not only meet a real need in public school education but will establish the University as the leader in this field in the State of Maine and a leader in the nation.

It is important to note that the concept of an Educational Computer major is multi-disciplinary. Faculty from the Math-Science Division, as well as the E/HPER Division, have worked together in developing this proposal. The materials contained in this packet includes an Intent to Plan, the proposed course schedule for an Educational Computer major and brief tentative course description for the proposed computer ad related. The course descriptions are general in nature and reflect only basic concepts. It will be the responsibility of the computer/educator to further develop and refine the proposed courses and their content. This will be done in cooperation with the Math-Science faculty. Detailed course descriptions and outlines will be prepared by the course instructor and each proposed new course will then be presented to the Division, Curriculum and Standards Committee, and ultimately the Senate for approval utilizing the proper format.

The question of proper and adequate resource allocation for such a major is a concern expressed by reviewing this proposal. My feeling is that our facilities and computing resources will easily meet the demands of such a program. For example, the University presently had 5 micro-computers, 4 main-frame terminals. and 2 printers. Through Title III funds and special allocations, 6 additional micro-computers, 3 - 4 printers, a graphics plotter, and software will be added by January 1984.

The Central Office has allocated campus funding for the faculty position of a computer educator. In addition, special monies have been identified by both the Central Office and Title III for the purchase of considerable additional software. Central Office has already dedicated an additional $15,000 for 1984-85 for the purchase of micro-computer hardware and software, and given the present trend in hardware prices, these funds will probably allow us to double the amount of equipment.

This proposal is based on projected need and the ability to effectively meet that need. Last week, Dr. Tripp and I met with the Certification Officer of the Department of Education and Cultural Services and an Assistant Attorney General for the State of Maine concerning this proposal. The concept of the program was well received, and we will have the Department's support when a proposal for certification advances to the State Board of Education for consideration.

The time line is such that for a new major in Educational Computing should come before the University Senate at its December meeting, since the University must forward a detailed plan to the University Program Review Committee in January 1984.

In reviewing this request, please keep in mind that what you are addressing are general concepts, rather than specifics. The specific courses will be brought to your committee and the Senate for final approval when an instructor is employed, and they are developed.

We have discussed the possible format of the Computer Electronics courses with appropriate personnel at UMVTI. They have expressed great interest in the prospect of teaching these courses and have indicated a willingness to cooperate and assist in the development and delivery. It should also be noted that the Central Office and the State Department of Education look very favorable on this type of cooperate arrangement.

In the event you have any specific questions or seek additional information, please feel free to contact me or Dr. Terry Tripp.

Thank you.

JCS:mah

cc: Dr. Richard Cohen, Acting Vice President for Academic Affairs
Dr. Terrance Tripp, Chairperson, Math-Science Division

APPENDIX C

STATE OF MAINE
Department of
Educational and Cultural Services
STATE HOUSE STATION 23
AUGUSTA, MAINE 04333

January 9, 1984

Dr. Jack Sheltmire
University of Maine at Presque Isle
Presque Isle, ME 04769

Dear Dr. Sheltmire:

Enclosed is a copy of the comments I received from the Department's consultant in educational computers, Richard Riley. He did not have the benefit of our conversation with you, but his concern seems to be similiar to one alluded to previously - whether or not an educational computing major would be a viable person for positions in Maine's public schools.

If I remember correctly, you said the student in this field would be prepared to teach another subject as well as "computers", and that the preparation would train the individual to teach in another subject. If this is the case, I would support your proposed program for certification purposes. However, I feel that computer skills should be taught to all teachers so that computer applications might be integrated into all subject areas. The school system that would hire a person to work with computers exclusively would be extremely rare, and I question how many schools would be able to do that. As a resource person, teaching some related subject, however, the probability of employment might be greatly enhanced.

I applaud your efforts in this area. Certainly the whole arena of computers in schools is one which is rapidly making its way to the top of educational priorities. It is nice to know that a Maine institution is at the forefront of this movement.

If I might be of assistance to you, please contact me at your convenience.

Sincerely,

Steven R. Hamblin, Director
Certification and Placement

SRH/llw

enc: copy of R. Riley's memo of January 4, 1984

STATE OF MAINE

Inter-Departmental Memorandum Date January 4, 1984

To Steve Hamblin, Certification Officer Dept.

From Richard K Riley, Eduational Computer Cons Dept.

Subject UMPI Educational Computing Major Proposal

1. This memo is in response to your request to review and comment on the UMPI Educational Computing Major proposal.

2. I feel it is to UMPI's credit that they are striving to be leaders in the new technologies that are emerging in education. They are showing foresight in responding to new needs.

3. However, I feel that they are approaching the need for computer skills in schools in a manner that is too specific. I feel that all pre-service (undergraduate) educators should take courses in the educational use of microcomputers, but I do not feel that there should be a certifiable position similar to librarian just to operate microcomputers in schools. I would urge some of the courses proposed by UMPI to be required of all librarians and media center directors.

4. Specifically responding to the proposed curriculum, I feel it is inappropriately centered on electronics and math/physics. UMO offers a Computer Science major that would be much more appropriate if this was a hardware/software emphasis. I would eliminate the compter Electronics and Architecture course along with the advanced math and physics courses. But then, you don't have a major. Please augment the present education curriculum and don't build a new category.

APPENDIX D

UNIVERSITY OF MAINE AT PRESQUE ISLE

Spring 1985

Course Outline:

Cos 196, Introduction To Educational Computing

Description:

This course will survey applications of computing in educational settings. Students will develop their practical and analytic skills within this context.

Computer Literacy, or its equivalent, is a prerequisite, simultaneous enrollment is acceptable.

Instructor Dr. Andrew R. J. Yeaman
Office Hours: Monday: 9:30 p.m. - 10:30 p.m. Tuesday: 12:05 - 1:05 p.m.
Office: Folsom 101B Thursday: 8:00 p.m. - 9:00 p.m.
Telephone: 764-0311, Ext.
Ext. 301 (to leave a message)

Texts and Materials:

Association for Educational Data Systems Journal, Vol 17, Nos. 1 & 2, Fall & Winter, 1983.
(Special issue on Applications of Microcomputers for Instruction and Educational Management). 1201 Sixteenth St., NW, Washington, D.C. 20036 ($10.00)

Teachers College Record, Vol. 85, No. 4, Summer 1984.
(Special issue on The Computer in Education in Critical Perpective).
Box 103, Teachers College, Columbia University, NY 10027 ($6.00)

Several floppy disks: Verbatim Datalife.

Fox, Annie & Fox, David (1983). Armchair Basic: An Absolute Beginner's Guide to Programming in BASIC. Berkeley, CA: Osborne/McGraw-Hill

Additional Resources:

Library booklist, periodicals and other library resources.
Hardware and software documentation.

Selected articles from such authoritative periodicals as:

Behavior and Information Technology

British Journal of Educational Technology

Educational Communication Technology Journal

Educational Technology

Ergonomics

Human Factors

Cos 196, Introduction To Educational Computing

Instructional Innovator

Programmed Learning and Educational Technology
and others, for example:

Skinner, B. F. (1984). "The Shame of American Education.
American Psychologist, 39 (9) 947-954.

Objectives:

By the end of this course students will be able to demonstrate the operation of a variety of microcomputers and disk operating systems.

*Apply basic knowledge of the psychology of the student - computer interface.

Evaluate commercially produced educational computing software with standard criteria.

Demonstrate instructional used of BASIC and LOGO.

*Express coherent opinions of the past, present and future conditions of educational computing and its social impact.

*Formulate rational points of view regarding educational computing's dual relationship with computer science and educational technology.

Evaluation of Student Learning:

Mastery level proficiency in the objectives listed above is essential to pass this class.

Letter grades will be based on demonstration of critical thinking skills toward the objectives marked with asterisks.

Critical thinking will be measured by 7 in-class exams: only the top scores will count for 50% of the grade.

An in-class presentation will carry 20%; and
a term paper on the same topic will be worth 30%.

Regular class attendance and participation is expected.

APPENDIX E

Copies are availalbe in:
The President's Office
The Vice-president's Office
The Education Department Office

APPENDIX F

UNIVERSITY OF MAINE *PRESQUE ISLE*

Fall, 1985

Course Outline

EDU 160 Introduction to Educational Computing

Tuesdays and Thursdays: 3:05 pm--4:20 pm

Description:

A survey course with a computer literacy foundation in which students will develop practical and analytic skills related to Educational Computing. Topics: history, components, operation, control/programming, cultural/economic impact and moral/ethical issues. Building on this foundation, the application of microcomputers to education and training will be introduced.

Instructor: Dr. Andrew R. J. Yeaman

Office hours: Mondays and Wednesdays: 9:00 pm--9:30 pm
Tuesdays and Thursdays: 2:00 pm--3:00 pm
and by appointment.

Office: Folsom 101B

Telephone: 764-0311 Ext. 300

Text and Materials:

Taffee, S. J. (Ed.) (1985). Computers in education 85/86. Guilford, CN: Dushkin.

Fox, A. & Fox, D. (1983). Armchair BASIC: An absolute beginner's guide to programming in BASIC. Berkeley, CA: Osborne/McGraw-Hill.

At least one 5 1/4 inch floppy disk.

Additional Resources:

Selected articles from authoritative periodicals.

Library reserve booklist & periodicals.

Hardware and software documention.

Slide programs.

Objectives:

By the end of this course students will be able to:

* Outline the history of computing.
* Discuss the social impact of computing.
* Operate an Apple II microcomputer properly.
* Perform the rudiments of electronic text editing and formatting with the Appleworks word processor.
* Apply basic knowledge of the psychology of the student-computer interface.
* Demonstrate some familiarity with commercially produced educational computing software.
* Demonstrate instructional uses of BASIC and LOGO.
* Express informed opinions on the past, present and future conditions of educational computing.
* Formulate rational points of view regarding educational computing's dual relationship with computer science and educational technology.

Evaluation of Student Learning:

Mastery level proficiency in the objectives is essential to pass this class and will be determined through the completion of non-graded assignments. Letter grades will be based on two midterm examinations (15% each) and a final examination (20%). The term project weighs 40% and will be evaluated in two ways: A presentation in class of the term project will carry 15% and a term paper on the same topic will be worth 25%. The term paper must be written with a word processor. Quality of participation in class will contribute 10% of the final grade.

Regular class attendance and participation is expected.

UNIVERSITY OF MAINE *PRESQUE ISLE*

Fall, 1985

Course Outline

EDU 161 Educational Computing: Intermediate

Mondays: 6:00 pm--9:00 pm

Description:

A close-up view of social and psychological issues surrounding the role of computing in instructional processes. Emphasizes the selection of software, hardware and online services relative to needs assessment.

Prerequisite: Students should have some prior experience in educational computing that is at least the equivalent of a computer literacy course.

Instructor: Dr. Andrew R. J. Yeaman

Office hours: Mondays & Wednesdays: 9:00 pm--9:30 pm
Tuesdays & Thursdays: 2:00 pm--3:00 pm
and by appointment.

Office: Folsom 101B

Telephone: 764-0311 Ext. 300

Text:

Turkle, S. (1984). The second self: Computers and the human spirit. New York: Simon and Schuster.

Additional Resources:

Selected articles from authoritative periodicals.

Library reserve booklist & periodicals.

Hardware and software documention.

Objectives:

By the end of this course students will be able to:

* List steps involved in needs assessment for educational computing.

* Plan instructional units on psychological and social aspects of educational computing.

* Apply standard evaluation methods to the purchase of educational computing hardware, software and online services.

* Use the appropriate tools for selecting educational computing hardware, software and online services.

* Create an educational computing selection policy.

Evaluation of Student Learning:

Mastery level proficiency in all the objectives is essential to pass this class. Letter grades will be based on examinations and assignments:

1. Develop a needs assessment tool.

2. Write an outline lesson plan for instruction relevant to a psychological or a social aspect of educational computing.

3. Complete 10 evaluations of specified hardware, software and online services.

4. Make purchase selections appropriate to a specific educational setting, given a one year budget of $750. Explain justifications in an essay.

5. Write a term paper that describes an educational computing selection policy for a fictitious institution. The term paper must be written with a word processor.

6. There will be a midterm and a final.

7. Quality of participation in class will contribute in part to the final grade.

Regular class attendance and participation is expected.

APPENDIX G

DISK 38 FILE PSA

RADIO PUBLIC SERVICE ANNOUNCEMENT

ONE MINUTE PSA

At the University of Maine--Presque Isle a new academic program in Educational Computing is being developed.

Not only do all prospective teachers learn about teaching with computers in their professional preparation but a Bachelor of Science degree in Educational Computing is also offered to Education majors. The University of Maine--Presque Isle is one of the first Universities in the country to have this innovative, new degree.

For currently employed teachers, courses in Educational Computing are also available and these can lead to a University Certificate in Educational Computing.

The present level of computing facilities at the University of Maine--Presque Isle is undergoing a dramatic increase with $152,000 of Bond Issue funds and the new opportunities for students in the Educational Computing program represent your tax dollars at work.

For more information on the Educational Computing program at the University of Maine--Presque Isle, call 764-0311 and ask for Admissions.

57 secs

TELEVISION PUBLIC SERVICE ANNOUNCEMENT

THIRTY SECOND PSA

At the University of Maine--Presque Isle a new academic program in Educational Computing is being developed.

Not only do all prospective teachers learn about teaching with computers but a Bachelor of Science degree in Educational Computing is also offered.

For currently employed teachers, courses are available that lead to a University Certificate in Educational Computing.

For more information on the Educational Computing program at the University of Maine--Presque Isle call 764-0311 and ask for Admissions.

25-27 seconds

Visuals for this PSA appear on the following pages.

UNIVERSITY
OF
MAINE
at
Presque Isle

ADMISSIONS
OUTREACH

APPENDIX H

UNIVERSITY CERTIFICATE IN EDUCATIONAL COMPUTING

Dr. A. R. J. Yeaman
Coordinator of Educational Computing
A Proposal
November 1, 1985

Introduction

Computers are becoming more accessible and are diffusing into all aspects of education. In addition to the study of computers, computer programming and computer literacy, computing technology is being incorporated into the K-12 curriculum in support of instruction at all levels. Consequently the increasing use of computers by teachers and students is accompanied by more demands that teachers have professional preparation in educational computing.

Analysis

The following presents an analysis of the conditions which indicate the necessity for a University certificate in educational computing.

1. There is no coherent program or sequence of courses for practicing teachers in Northern Maine to learn educational computing skills. The scope of educational computing requires teachers complete more than a single course to ensure competency.

2. By taking single courses and workshops teachers are demonstrating an enthusiasm for using computers in their classrooms at both elementary and secondary levels. For example, the Northern Maine School Districts' Consortium has offered educational workshops on computing skills. These workshops were heavily attended but due to their short time span--one day--no in depth or sequential building of skills could be provided.

3. Practicing teachers are asking for computer courses which would meet particular needs by subject and grade level. These are teachers who already have bachelor's degrees--the need is for supplementary programs for professional growth.

4. Some teachers have taken courses at NMVTI. However, these courses generally offer an emphasis on business and computer data entry. There is a need for coursework specifically relevant to educational computing for teachers. This should be provided by those responsible for teachers' continuing professional education: University Education faculty.

5. State requirements for educational computing experiences for all students and a standard of computer proficiency by graduating high school students is part of the Maine Educational Reform Act of 1984. This places pressure on school districts to have personnel in all subject areas with appropriate instructional skills in educational computing.

Goals

The previous conditions lead to specific goals at the University, school district and individual level. These are the goals that a certificate in educational computing could meet.

University goals

1. Increase enrollment in University courses.

2. Meet current needs of the community for educational computing coursework.

3. Maintain the University's position of demonstrating commitment to the technological needs of Northern Maine.

4. Maintain the University's position of leadership in teacher education.

5. Provide a minor for undergraduates who are interested in educational computing but who do not wish to major in the subject.

School District Goals—The University would help meet the needs of school districts to:

1. Provide teachers who are credentialed in educational computing.

2. Assure teaching competency through a sequential development of structured skill building experiences.

3. Provide personnel who have both practical experience and critical awareness of new developments in educational computing.

Teacher Goals—The University would help meet the needs of currently practicing teachers to:

1. Incorporate educational computing into their instructional repertoire.

2. Make good decisions about planning, evaluating and revising educational computing facilities, equipment and software.

3. Attain recertification.

4. Have a coherent sequence of coursework with a specific educational focus.

Objectives

The following specifies the nature of the competencies students completing the educational computing certificate will have, the courses required to acquire those competencies and the descriptions of the courses required.

Competencies--Holders of certificates in educational computing will be able to:

1. Advise teachers, schools and school districts on obtaining and using needed hardware, software and on line services.

2. Create policy and procedures for selecting and evaluating courseware relevant to instructional contexts.

3. Advise on Computer-Based Interactive Video.

4. Advise on systematic instructional design of courseware.

5. Establish microcomputer learning environments which are both efficient and high in humane qualities.

6. Manage the operation of an educational computing center including budget preparation and the supervision and training of assistants.

7. Analyze information processing needs, write position papers and establish strategies for attaining the goals.

8. Evaluate educational computing programs by using formative and summative techniques.

9. Apply the intellectual foundations of educational computing by demonstrating critical analysis of new developments.

10. Engage in the lifelong learning essential to keeping up with the new developments in computing technology and activity in educational research.

Course Requirements--These competencies will be met through a sequence of courses equaling 18 semester hours of credit.

University of Maine--Presque Isle

Certificate in Educational Computing

Curriculum (18 Credit Hours)

Required Courses (12 Credits)

EDU 160	Introduction to Educational Computing*	3
EDU 161	Educational Computing--Intermediate	3
EDU 250	Educational Programming	3
EDU 275	Management of Ed. Computing Environments	3

One Education Elective (3 Credits)

EDU ___	Educational Computing--Advanced	3
EDU ___	Methods in Computing	3

One Computer Science Elective (3 Credits)

COS 125	Introduction to Business Computing	3
COS 220	Advanced Programming I	3
COS 221	Advanced Programming II	3
COS 250	Information Processing	3
COS 320	Computer Electronics & Architecture	3
COS 330	Algorithms	3

*COS 101 Computer Literacy or an equivalent may be substituted for EDU 160 if approval is obtained from the Coordinator of Educational Computing.

Course Descriptions--Required Courses

EDU 160 Introduction to Educational Computing

A survey course with a computer literacy foundation in which students will develop practical and analytic skills related to educational computing. Topics: history, components, operation, control/programming, cultural/economic impact and moral/ethical issues. Building on this foundation, the application of microcomputers to education and training will be introduced.

EDU 161 Educational Computing: Intermediate

A close-up view of social and psychological issues surrounding the role of computing in instructional processes. Emphasizes the selection of software, hardware and online services relative to needs assesment.

EDU 250 Educational Programming

Systematic instructional design principles will be applied to courseware authoring projects for education or training. The course will emphasize the development of materials for Computer Assisted Instruction and Computer Based Interactive Video.

EDU 275 Management of Educational Computer Environments

Ranging from philosophical justifications to technical procedures, this course will concentrate on the evaluation, planning and implementation of facilities supporting educational computing.

Course Descriptions--Elective Courses

EDU --- Educational Computing: Advanced

A course in seminar format where students complete analytic research projects in areas related to their specific subject area or grade level. It provides a synthesis of the skills and experiences from the foundation courses.

EDU --- Methods in Computing

For teachers who are teaching computer literacy or computer programming classes, this course provides an overview of instructional methods and materials. Students will develop a unit of instruction related to computing. Instructional design principles, such as assessing learner needs, writing goals and objectives and evaluating instruction, will be applied.

COS 125 Introduction to Business Computing

Survey of accounting, inventory, business planning, and financial analysis packages. Management of information systems and COBOL programming.

COS 220 Advanced Programming I

In depth study of computer programming languages; BASIC, Pascal and Fortran using microcomputers and mainframe computers. Introduction to assembly language and machine language programming.

COS 221 Advanced Programming II

A continuation of COS 220. Emphasis on advanced programming techniques. Includes several major programming projects.

COS 250 Information Processing

An in depth study of software used for information processing. Includes a detailed survey of word processing, spread sheet and data base management software.

COS 320 Computer Electronics and Architecture

Introduction to digital circuits from gate standpoint. Emphasis on solid state devices including small and large scale integrated circuits. Introduction to microprocesses. Practice in trouble shooting and maintenance of microcomputers.

COS 330 Algorithms

Numerical analysis including interpretation and approximation, integration, solutions of nonlinear equations, and systems of equations. Discrete methods including network flows, paths, trees, graph traversal and circuits and transportation.

Materials, Facilities and Equipment

Materials

1. An educational computing software collection is being built for the use of Education students and students in the Bachelor of Science Program in Educational Computing. This collection would also be applicable to students in the certificate program.

2. An extensive reserve list of books in educational computing is available in the library for Education students and students in the Bachelor of Science in Educational Computing program. These, also, are applicable to students in the certificate program.

3. The library supports the total Education curriculum with periodical holdings. This means current subject and grade level information will be available to both Bachelor of Science students and students in the certificate program.

Facilities

1. Educational Computing uses Academic Computing facilities for in class labs, demonstrations and out of class assignments. These facilities would be available to students in the certificate program with no modifications necessary.

2. Some educational state of the art equipment is currently available and more is anticipated as the result of the 1984 bond issue. (This includes computer based interactive video and a large screen computer video projector.) This equipment would be available to students in the certificate program.

Personnel

The Educational Computing Certificate would require no change in current personnel in any department. There would simply be greater numbers of students enrolled in courses already offered.

Evaluation

Evaluation decides the effectiveness and efficiency of an instructional program. This section provides a general outline for continued evaluation of the Educational Computing Certificate to be certain of its relevance and continued need.

Purpose

Evaluation of the Educational Computing Certificate will serve two purposes:

1. To assure that need for a certificate in educational computing still exists.

2. To provide revisions or reorganization of the goals and objectives to assure their continued relevancy.

Areas for Evaluation

1. Competencies--to reflect current needs and technological changes.

2. Course requirements--to continue to meet the needs of teachers and school districts.

3. Enrollment--to be certain a need still exists based on numbers of students in either the certificate program or specific courses.

4. Goals--to continue to analyze the needs of conditions in Northern Maine.

Collection of Information

1. The number of students enrolled in the certificate program will be obtained from Admissions.

2. Current practice in educational computing will be monitored through reading of professional publications and informal interviews with practicing teachers.

3. The number of practicing teachers in specific courses in educational computing will be monitored.

4. District authorities, University representatives and school department heads will be consulted on the effectiveness of the students' preparation.

Analysis

The number of students in individual courses, the number of students applying for certification, the continued need for meeting goals and competencies will all be considered in an analysis of the certificate. This analysis should be done every two years to be certain that the certificate program is still viable and needed.

Conclusion

Current teachers and new teachers--who do not have expertise in computer science--need the opportunity to gain appropriate coursework in educational computing. A program of courses and electives selected from the Bachelor of Science in Educational Computing syllabus can fill this need. The granting of University certificates upon completion will indicate that the holders of the credential have a solid foundation in the field of educational computing: They will be knowledgeable about the application of computers to instruction.

APPENDIX I

UNIVERSITY OF MAINE *at Presque Isle*

Presque Isle, Maine
207/764-0311

November 12, 1985

Mr. Steven R. Hamblin, Director
Certification and Placement
Department of Educational and Cultural Services
State House Station 23
Augusta, ME 04333

Dear Mr. Hamblin:

I am writing to you about teacher certification in the field of Educational Computing. My question is, "What needs to be done to see that University graduates with a Bachelor of Science in Educational Computing will be certificated in Educational Computing?"

At this time last year I joined the Presque Isle campus of the University of Maine, given the responsibility of coordinating the Bachelor of Science in Educational Computing degree program. Since then I have conducted needs assessments, curriculum revision and analysis of future directions. Further, the introductory course in the major has been taught and I am teaching it again this semester, along with an intermediate course on selection and evaluation of computerized instructional materials. Plans are set for the intermediate class to be repeated during Spring semester in addition to a new class on courseware authoring that includes Computer-Based Interactive Video.

The first student promises to graduate from the program within 18 months, qualified to teach computer science at the secondary level and to be a school computer specialist. In the past year at least half a dozen students have declared Educational Computing as their major and there appears to be slow but continued growth in numbers. This is in spite of my reminding prospective students that the University cannot say that completing the program will allow eligibility for certification unless a teachable minor is fulfilled too. Therefore I believe there is quite some enthusiasm for this program and enrollment will be greater once Educational Computing is certifiable.

Until Educational Computing is certifiable by the Department of Education, the statewide need for teachers with this professional preparation will remain unmet. The Maine Education Reform Act provides pressure for school districts to recruit personnel qualified in this area. The University's students undergo a thorough Educational Computing experience and will be far superior to teachers who acquire knowledge from workshops, one shot summer classes and fragmentary self teaching.

I close by emphasizing the value of the University of Maine--Presque Isle Educational Computing program as right on target and relevant to the needs of the whole state in providing more effective instruction.

I look forward to hearing from you.

Sincerely,

Andrew R. J. Yeaman

Andrew R. J. Yeaman, Ph.D.
Assistant Professor of Educational Computing

cc: Mr. Dennis Kunces, Microcomputer Consultant
Dr. Jack C. Sheltmire, Chair, E/HPER

STATE OF MAINE

Department of
Educational and Cultural Services
State House Station 23
AUGUSTA, MAINE 04333

November 22, 1985

Andrew R. J. Yeaman, Ph.D.
Assistant Professor of
Educational Computing
University of Maine at
Presque Isle
Presque Isle, Maine 04769

Dear Mr. Yeaman:

Thank you for your letter concerning teacher certification in the field of Educational Computing. To say that Educational Computing is a relevant topic these days would be an understatement, but it certainly is an issue that is being addressed in several different arenas. Your question "What needs to be done to see that University graduates with a Bachelor of Science in Educational Computing will be certified in Educational Computing" can only be answered with several suggestions. First, any certification categories that are not currently in existence must be approved by the State Board of Education. If you feel there is a need for a certificate category entitled Educational Computing, you would need to approach the State Board of Education directly.

In several instances certain individuals do teach Educational Computing in a school system with another teaching certificate. For instance, an individual who has a major in mathematics but has taken several courses in computors will become employed in a school system to teach. The teaching load however, may be primarily teaching Educational Computers because he or she is the only one in the school system that has an adequate background in this field.

As there are presently no certificate categories specifically in this field, anyone who has expertise and also holds a teacher certificate at the appropriate grade level may be employed to teach Educational Computing. At first glance this current situation seems to be a very haphazardous way of satisfying public schools' needs in this field. On the other hand, it seems to indicate that Educational Computing is not an isolated discipline and should in fact be incorporated into the total curriculum grades K-12. By this I mean that English teachers should be teaching the use of computers in the English curriculum, social studies teachers, math teachers, science teachers - all should be doing the same thing. To hire an individual to teach students about computors in isolation does not satisfy the intent of the new computer literacy requirement that is now part of the State school approval process.

Individuals completing a program at the University of Presque Isle with a major in Educational Computing will have to fit into other existing certification categories in order to work in public schools. I am assuming their programs have sufficient courses in other related fields to warrant majors in established disciplines such as math or science.

Please feel free to contact the State Board of Education at your convenience about your concerns in this area. If I may be of further assistance, please contact me at my office.

Sincerely,

Steven R. Hamblin
Director, Certification
and Placement

SRH:vkb

STATE OF MAINE

Department of
Educational and Cultural Services
State House Station 23
AUGUSTA, MAINE 04333

November 25, 1985

Andrew Yeaman
Educational Computing
University of Maine
Presque Isle, ME 04769

Dear Andrew,

Thank you for sending the information concerning the UMPI computer education program. I will use it either in this Micro Messenger or the next depending on space. I have combined newsletters with Doris Ray of the Maine Computer Consortium and for this issue we have a ton of articles.

Concerning the computer guidelines, the spring draft is still the one we hand out but we expect to finalize it by January. I have you on the mailing list for the final version.

Your letter to Steve Hamblin was very interesting and I wish you luck in your certification attempts. Keep up the good work in Presque Isle.

Sincerely,

Dennis C. Kunces
Microcomputer Consultant

DCK:bjd

APPENDIX J

UNIVERSITY OF MAINE *Presque Isle*

Presque Isle, Maine
207, 764-0311

January 29, 1985

Dr. Richard Cohen
Vice President for Academic Affairs
University of Maine at Presque Isle
Presque Isle, ME 04769

Dear Dr. Cohen:

It is my recommendation that Dr. Andrew R. J. Yeaman be reappointed as Assistant Professor of Educational Computing for the 1985-1986 Academic Year. This recommendation is based on the reappointment criteria outlined in the AFUM Agreement and the University Handbook.

Due to Dr. Yeaman's appointment in October, he was not scheduled to teach during the fall semester. His efforts have been directed toward the organization and development of the Educational Computing program; advising students; workshops; and scholarly activity.

Dr. Yeaman has worked with Dr. Goheen and the Professional Development Center in developing a workshop regarding computer application in agriculture. In addition, Andrew played a vital role in the success of the Honors Day this past fall. Most recently Andrew delivered a paper at the National AECT Convention held in California.

Dr. Yeaman certainly has the technical and educational expertise to coordinate, develop and teach in the Educational Computing program. The real challenge lies in the ability to understand the technical, financial and educational constraints found within the University and the public schools; yet deliver a program and quality product. Dr. Yeaman understands this and is willing to assume the challenge.

Dr. Yeaman is a definite asset to the Division, the University and the community. He has already been identified by the State Education Department as a State leader in the computer area.

Sincerely,

Jack C. Sheltmire

Jack C. Sheltmire, Ph.D.
Chairperson, Division of Education, Health,
Physical Education and Recreation

JCS:mah

cc: Dr. Andrew R. J. Yeaman
Personnel File

UNIVERSITY OF MAINE *at Presque Isle*

Vice President for Academic Affairs

Presque Isle, Maine 04769
207/764-0311

March 12, 1985

Dr. Constance H. Carlson
President
University of Maine at Presque Isle
181 Main Street
Presque Isle, Maine 04769

Dear Dr. Carlson:

In concurrence with the Division Peer Committee of the Education/ Health, Physical Education and Recreation Division and the Division Chairperson, I recommend reappointment of Dr. Andrew R. J. Yeaman as Assistant Professor of Educational Computing for the 1985-1986 academic year.

The recommendations are in accordance with Article 7, Appointment, Reappointment and Non-Reappointment, and Contract Status of the University of Maine with the Associated Faculties of the University of Maine.

Therefore, I also seek your approval.

Sincerely,

Richard Cohen
Vice President for Academic Affairs

RC/ss

cc: Dr. Jack C. Sheltmire
Dr. Andrew R. J. Yeaman
Personnel File

UNIVERSITY OF MAINE at Presque Isle

Office of the President

Presque Isle, Maine 04769
207 764-0311

March 14, 1985

Dr. Andrew R. J. Yeaman
19 Academy Street
Presque Isle, Maine 04769

Dear Doctor Yeaman:

In accordance with Article 7 of the collective bargaining agreement with the Associated Faculties of the University of Maine, I am writing to inform you that I have received recommendations from Dr. Jack C. Sheltmire, Chairman of the Division of Education/ Health, Physical Education and Recreation, and Dr. Richard Cohen, Vice President for Academic Affairs, supporting your reappointment as Assistant Professor of Educational Computing for the 1985-1986 academic year. I am pleased to advise you that I concur with their recommendations.

Cordially yours,

Constance H. Carlson

Constance H. Carlson

CHC:TK

cc:Dr. Richard Cohen
Dr. Jack C. Sheltmire
Personnel File

UNIVERSITY OF MAINE *at Presque Isle*

Presque Isle, Maine
207 764-0311

June 11, 1985

Dr. Andrew Yeaman
Assistant Professor of Educational Computing
University of Maine at Presque Isle
Presque Isle, Maine 04769

The following is intended as a summary of your peer evaluation as conducted by the ED/HPER Division Faculty during the 1984-85 Academic Year.

Since your employment at U.M.P.I. did not commence until well into the Fall Semester of this academic year, and because your peer evaluation was conducted prior to completion of the Spring Semester, a detailed evaluation of your performance was impossible. Nevertheless, it was expressed by your peers that you did have impressive credentials at the time of your initial employment at U.M.P.I. and that you have been working very hard since your arrival.

For example, it was stated that you have prepared new course syllabi for the Spring Semester courses which you are teaching, and that you have continued to pursue your research and writing activities. Additionally, your valuable contribution to the Division as it conducted its business to date this academic year was noted and supported. It seems that the Division Faculty are pleased to have you on campus to instruct and direct the new Educational Computing Program.

Sincerely,

Roger Richards

Dr. Roger F. Richards
Chairman, Peer Evaluation Committee

Stanley H. Small

Mr. Stanley Small
Peer Representative

TO Dr. Andrew R. J. Yeaman

FROM Dr. Jack C. Sheltmire
Chairperson, Division of E/HPER

DATE November 15, 1985

RE Educational Computing

Dr. Cohen notified me yesterday that the Educational Computing Program at the University of Maine at Presque Isle will be terminated. An impact study will need to be written following the format outlined by the Chancellor's office. Ultimately, the decision will be made by the University of Maine Board of Trustees.

Please schedule an appointment to see me as soon as possible so we can discuss this problem and arrange how we are going to deal with it.

JCS:mah

cc: Dr. Richard Cohen
Vice President for Academic Affairs

Ms. Carolyn Cheney
Personnel Officer

UNIVERSITY OF MAINE--PRESQUE ISLE

TO: Dr. Jack C. Sheltmire, Chair E/HPER

FR: Dr. Andrew R. J. Yeaman, Asst. Professor of Ed. Computing

DT: December 3, 1985

RE: Educational Computing Certificate Proposal

Due to the uncertainty surrounding the Educational Computing program, I will not be presenting a revised proposal for a University Certificate to the Curriculum and Standards Committee on Wednesday, December 5.

TO Dr. Richard Cohen
Vice President for Academic Affairs

FROM Dr. Jack C. Sheltmire
Chairperson, Division of E/HPER

DATE December 11, 1985

RE The Educational Computing Program/
Dr. Andrew Yeaman

The memorandum is to follow up our conversation yesterday regarding the deletion of the Educational Computing Program at the University of Maine at Presque Isle. This decision was a collective one between the Chairman of the Math-Science Division, the Admissions' Office, your office and myself. In addition, I notified Dr. Yeaman of this decision through a memo and scheduled a time to discuss the decision further.

In October, the idea of an Educational Computing Certificate Program was proposed and discussed in the Division. The program was approved and then forwarded to the Curriculum and Standards Committee of the Faculty Council for review. Last week, Dr. Yeaman withdrew the proposal indicating the Certificate Program would not be successful at the University of Maine at Presque Isle as well.

This item was further discussed at our Division meeting on Monday, December 9th, and again Dr. Yeaman indicated to the group that the Certificate Program would not be successful, and consequently should not be pursued.

Based on the decision to terminate the Educational Computing Program and Dr. Yeaman's decision to withdraw the Certificate proposal in Educational Computing, I have no recourse but to recommend that Dr. Yeaman not be reappointed for the 1986-1987 Academic Year. Without the Educational Computing major or a Certificate program, Dr. Yeaman will not have a course load.

In the event you have any questions regarding this, please feel free to contact me.

JCS:mah

cc: Ms. Carolyn Cheney, Personnel File
Dr. Andrew R. J. Yeaman
Dr. Constance Carlson

UNIVERSITY OF MAINE *at Presque Isle*

Vice President for Academic Affairs

Presque Isle, Maine 04769
207/764-0311

December 12, 1985

Mr. David Rankin
MTA Office
263 State Street
Bangor, Maine 04401

Dear Mr. Rankin:

Dr. Jack C. Sheltmire, Chairperson, Education/Health, Physical Education and Recreation, has recommended non-reappointment of Dr. Andrew R. J. Yeaman, effective May 31, 1986, because of a lack of enrollments in Educational Computing. Without the enrollments, the campus does not have need for a person with Dr. Yeaman's background. I concur with the recommendation.

Sincerely,

Richard Cohen
Vice President for Academic Affairs

RC/ss

cc: Dr. Andrew R. J. Yeaman
Dr. Jack Sheltmire
Dr. Richard Kimball
Dr. Richard Ayre
Ms. Carolyn Cheney

UNIVERSITY OF MAINE *at Presque Isle*

Vice President for Academic Affairs

Presque Isle, Maine 04769
207/764-0311

December 12, 1985

Dr. Constance H. Carlson
President
University of Maine at
Presque Isle
181 Main Street
Presque Isle, Maine 04769

Dear Dr. Carlson:

Dr. Jack C. Sheltmire, Chairperson, Division of Education/ Health, Physical Education and Recreation, has recommended that Dr. Andrew R. J. Yeaman receive a non-reappointment notice effective May 31, 1986.

I concur with the recommendation and seek your agreement.

There has been a collective agreement among Dr. Sheltmire, Dr. Richard Kimball, Chairperson, Mathematics/Science Division, and the Vice President that the Educational Computer program be discontinued because of lack of enrollments. As a result, there will be no need for the services of a person with Dr. Yeaman's background.

In the interest of the campus, then, and to enable Dr. Yeaman to have sufficient notice according to the collective bargaining agreement between the University of Maine and the Associated Faculties of the University of Maine and to give Dr. Yeaman time to plan, I make the recommendation for non-reappointment.

Sincerely,

Richard Cohen
Vice President for Academic Affairs

RC/ss
cc: Ms. Carolyn Cheney, Personnel Director
Dr. Andrew R. J. Yeaman
Dr. Jack C. Sheltmire
Dr. Richard Kimball

University of Maine/Presque Isle
Division of Education: Health, Physical Education and Recreation

Dec. 20, 1985

Dr. Jack Sneltmire, Chairman
Division of ED/HPER
University of Maine/Presque Isle
Presque Isle, Maine 04769

Dear Dr. Sneltmire:

The Peer Committee members whose signatures are affixed below, in accordance with the procedures adopted by the ED/HPER Division, hereby notify you that the Division Faculty recommends Dr. Andrew Yeaman for reappointment to the position of Assistant Professor of Educational Computing for which he/she is eligible, and has applied.

Peer Sub-committee

Name: Signature:

Roger H. Richards, Ed.D
Chairman, Peer Evaluation Committee

Roger Richards

BEST COPY AVAILABLE

UNIVERSITY OF MAINE at Presque Isle

Presque Isle, Maine
207 Main 211

January 13, 1986

Dr. Richard Cohen
Vice President for Academic Affairs
University of Maine at Presque Isle
Presque Isle, ME 04769

Dear Dr. Cohen:

The Divisional Peer Committee has recommended that Dr. Andrew R. J. Yeaman be reappointed for the next academic year. In that Dr. Yeaman's position has been terminated by President Carlson and the Educational Computing Program is being discontinued, I cannot support his reappointment.

I do not recommend Dr. Andrew R. J. Yeaman for reappointment.

Sincerely,

Jack C. Sheltmire

Jack C. Sheltmire, Ph.D.
Chairperson, Division of Education, Health,
Physical Education and Recreation

JCS:mah

cc: Dr. Andrew R. J. Yeaman
Personnel File

APPENDIX K

UNIVERSITY OF MAINE *PRESQUE ISLE*

Spring, 1988

Course Outline

EDU 250 Educational Programming

Thursdays: 6:00 pm--9:00 pm

Description:

Systematic instructional design principles will be applied to courseware authoring projects for education or training. The course will emphasize the development of materials for Computer Assisted Instruction and Computer Based Interactive Video.

Prerequisite: Students should have some prior experience in educational computing that is at least the equivalent of a computer literacy course.

Instructor: Dr. Andrew R. J. Yeaman

Office hours: Tuesdays & Thursdays: 12:15 pm--1:15 pm
and by appointment.

Office: 301 Normal Hall

Telephone: 764-0311

Text:

Torkelson, G. M. (1980). Guidelines for instructional development. Seattle: College of Education, University of Washington.

Additional Resources:

Educational Computing software collection.

Selected articles from authoritative periodicals.

Library reserve booklist & periodicals.

Hardware and software documentation.

Courseware authoring languages:
Pilot (Apple II) and Drill (Macintosh).

Objectives:

By the end of this course students will be able to:

* Outline content to be taught.
* Write behavioral objectives.
* Analyze learner needs.
* Plan activities and materials to accomplish objectives.
* Create flow-charts of activities.
* Specify characteristics of learning space and instructional management.
* Measure and evaluate results.

Evaluation of Student Learning:

Mastery level proficiency in all the objectives is essential to pass this class and will be determined through non-graded assignments. Letter grades will be based on completion of a term project resulting in the production of an acceptable CAI package.

Quality of participation in class will contribute in part to the final grade.

Regular class attendance and participation is expected.

UNIVERSITY OF MAINE *PRESQUE ISLE*

Spring, 1986

Course Outline

EDU 161 Educational Computing: Intermediate

Tuesdays and Thursdays: 3:05 pm--4:20 pm

Description:

A close-up view of social and psychological issues surrounding the role of computing in instructional processes. Emphasizes the selection of software, hardware and online services relative to needs assessment.

Prerequisite: Students should have some prior experience in educational computing that is at least the equivalent of a computer literacy course.

Instructor: Dr. Andrew R. J. Yeaman

Office hours: Tuesdays & Thursdays: 12:15 pm--1:15 pm
and by appointment.

Office: 301 Normal Hall

Telephone: 764-0311

Text:

Turkle, S. (1984). The second self: Computers and the human spirit. New York: Simon and Schuster.

Additional Resources:

Educational Computing software collection.

Selected articles from authoritative periodicals.

Library reserve booklist & periodicals.

Hardware and software documentation.

Objectives:

By the end of this course students will be able to:

* List steps involved in needs assessment for educational computing.
* Plan instructional units on psychological and social aspects of educational computing.
* Apply standard evaluation methods to the purchase of educational computing hardware, software and online services.
* Use the appropriate tools for selecting educational computing hardware, software and online services.
* Create an educational computing selection policy.

Evaluation of Student Learning:

Mastery level proficiency in all the objectives is essential to pass this class. Letter grades will be based on examinations and assignments:

1. Develop a needs assessment tool.
2. Write an outline lesson plan for instruction relevant to a psychological or a social aspect of educational computing.
3. Complete 10 evaluations of specified hardware, software and online services.
4. Make purchase selections appropriate to a specific educational setting, given a one year budget of $750. Explain justifications in an essay.
5. Write a term paper that describes an educational computing selection policy for a fictitious institution. The term paper must be written with a word processor.
6. Present and discuss assigned readings in Turkle.
7. Contribute towards a class project.
8. There will be a midterm and a final.
9. Quality of participation in class will contribute in part to the final grade.

Regular class attendance and participation is expected.

APPENDIX L

UNIVERSITY OF MAINE *at Presque Isle*

Office of the President

December 12, 1985

Dr. Andrew R. J. Yeaman
Assistant Professor of
Educational Computing
10 Academy Street, Apt. E
Presque Isle, Maine 04769

Dear Dr. Yeaman:

I have received recommendations from Dr. Jack C. Sheltmire, Chairperson, Education/Health, Physical Education and Recreation and Dr. Richard Cohen, Vice President for Academic Affairs, that you not be reappointed as of May 31, 1986. Their recommendations were made as a result of lack of enrollments in Educational Computer. The campus will have no need of a faculty member with your background. I therefore agree with the recommendation for non-reappointment.

Sincerely,

Constance H. Carlson

Constance H. Carlson
President

CHC:ss

cc: Ms. Carolyn Cheney, Personnel Director
Dr. Jack C. Sheltmire
Dr. Richard Kimball